

What is claimed is:

1. A switched coupler type digital phase shifter, comprising:

5       a coupling means for receiving one input signal and generating a first signal and a second signal having 180 degree phase difference based on the received input signal;

      a quadrature signal generation means for generating a third signal to a sixth signal having 90 degree phase  
10 difference to each other based on the first signal and the second signal outputted from the coupling means; and

      a switching means for selectively outputting one of the third signal to the sixth signal outputted from the quadrature signal generation means in response to a control  
15 signal.

2. The switched coupler type digital phase shifter as recited in claim 1, wherein the coupling means includes an active balanced-to-unbalanced (balun).

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3. The switched coupler type digital phase shifter as recited in claim 1, wherein the coupling means includes a passive balanced-to-unbalanced (balun).

25       4. The switched coupler type digital phase shifter as recited in claim 1, wherein the switching means includes a SP4T switch implemented by using a circuit of transistor

and diode or a micro electron mechanical (MEM) device.

5        5. The switched coupler type digital phase shifter as  
recited in claim 1, wherein the quadrature signal generation  
means includes a poly-phase filter.

6. A multi-bit digital phase shifter, comprising:  
a controller for generating control signals  
a digital phase shifter for receiving an input signal  
10 and the control signals from the controller and generating  
a first phase shifted signal having 45 degree phase  
difference comparing to the input signal base on the  
control signals; and

a switched coupler type digital phase shifter for  
15 receiving the first phase shifted signals from a digital  
phase shifter and the control signal from the controller  
and generating a second phase shifted signal having 90  
degree phase difference comparing to the first phase  
shifted signal,

20        wherein the switched coupler type digital  
phase shifter includes:

a coupling means for receiving the first  
phase shifted signal and generating a first signal  
and a second signal having 180 degree phase  
25 difference based on the received input signal;

a quadrature signal generation means for  
generating a third signal to a sixth signal having

90 degree phase difference to each other based on the first signal and the second signal outputted from the coupling means; and

5 a switching means for selectively outputting one of the third signal to the sixth signal outputted from the quadrature signal generation means as the second phase shifted signal in response to a control signals.

10 7. A multi-bit digital phase shifter, comprising:

a controller for generating a control signals;

a switched coupler type digital phase shifter for receiving an input signal and the control signal from the controller and generating a first phase shifted signal  
15 based on the control signals,

wherein the switched coupler type digital phase shifter includes:

a coupling means for receiving the input signal and generating a first signal and a second  
20 signal having 180 degree phase difference based on the received input signal;

a quadrature signal generation means for generating a third signal to a sixth signal having 90 degree phase difference to each other based on  
25 the first signal and the second signal outputted from the coupling means; and

a switching means for selectively outputting

one of the third signal to the sixth signal  
outputted from the quadrate signal generation means  
as the first phase shifted signal in response to a  
control signals; and

5        a digital phase shifter for receiving the first phase  
shifted signal from the switched coupler type digital phase  
shifter and the control signals from the controller and  
generating a second phase shifted signal having 45 degree  
phase difference comparing to the first phase shifted  
10    signal base on the control signals.